Some indications as to reduction of phosphoric acid from the slag are given by the analyses on p. 160.
It is apparent that the re-entry of phosphorus into the metal accompanies an increase in the silica content of the slag, or carrying too far the removal of iron-oxide from the same, thereby creating more than normal efforts on the part of the reducing agents to satisfy their affinity for oxygen.
8. MANGANESE.
Manganese is oxidised according to the formula Mn + 0= MnO. From this one derives that each 1 per cont. Mn requires 0'2i) per cent. 0, and produces 1*21) per cent. MnO . . . (M).
Manganese is generally eliminated as manganese silicate, as stated on p. 146. Lime is able in this case (as in that of the analogous iron-silicate) to replace the metallic oxide, and the manganese protoxide thus freed is in like manner soluble in the iron-lime silicate slag.
Free manganese protoxide is produced from SiMnOa accord-ing to the equation SiMn();j+CaO=SiCaOj{+Mn(), and under the influence of the reducing agents in converted into the metallic state and returned to the metal.
One therefore frequently finds a sudden increase in the manganese content of the bath, which in only explainable by a reduction of manganese from the slag.
Thus Ledebur (St. uncl E., 190;*, p. 40) given the following examples from the J>ertrand-Thiel process :—
Int Furnace-2nd !!
TostJlM „ 11>'±J1 ,, I'M) -'<>
Per ("out. Mn in wotnl, 0 OhS ;
Per coit Fo in S!M#, 12-0
Dr. Nanke has (ride. Kt. und E,, 11)07, pp. 1T>8 c,t scq.) not out a series of analysoH of the maganese in mental and slag, and arrived at the conclusion that it in determined by the relative ratios of MnO and Fe() in the slag. With a ratio of MnO to Fe()=unity a state of equilibrium can exist, but with MuO>-FeO manganese goes over from slag to metal, and with MnO-<FeOT manganese goes over to the slug from tlio metal.